REMARKS/ARGUMENT

Claims 6-29 are pending. Claims 6, 7, 9, 13, 21, 28 have been amended. The changes are simply for clarification and do not narrow the scope of the claims. Claims 6, 9, 12, 13, 16, 21 and 28 are the independent claims.

The objection to claim 7 is believed obviated by the amendment to that claim. The amendment clarifies that claim 7 depends upon claim 24.

Claims 6-29 were rejected under 35 U.S.C. § 103 over U.S. Patent 5,848,409 (Ahn). Applicant traverses and submits that independent claims 6, 9, 13 and 21 are patentable for at least the following reasons.

Independent claim 6 is directed to a computerized method for controlling storage and retrieval of data in a memory device by constructing a data structure in which items of data are stored for search. The method comprises: a) forming an assumed tree structure in which all the items of data are stored; b) sequentially selecting a node from the assumed tree structure to select a sub-tree structure including the selected node and any child nodes of the selected node; c) forming an equivalent table storing at least a portion of the items of data included in the selected sub-tree structure in a table form; d) determining whether the selected sub-tree structure satisfies one or more predetermined conditions; and e) when the selected sub-tree structure satisfies the one or more predetermined conditions, replacing the selected sub-tree structure with the equivalent table to construct the data structure.

To support a prima facie case of obviousness, each and every limitation of the claim, *in precisely the relationship recited*, must be taught or suggested in the prior art. It is not sufficient to simply identify possible counterparts to limitations when those counterparts do not relate to one another in the recited manner. Because of the foregoing requirement, it is important that care be taken that correspondences between elements of the prior art and limitations of the claims be applied in a consistent manner. However, this was not done in the Office Action.

Ahn, as understood, shows a method for electronically searching through documents. Toward this end, a group tree 202 and a group index table 204 is established for a group of documents. The group tree is a tree data structure, such as a binary tree, that includes a node for each searchable item. Associated with each node are pointers to the occurrences in a group index table of the searchable item. Once the searched-for term (node) is found by searching the tree, the pointers stored at the node allow access to the index table, where the occurrences of the term in various documents is kept in tabular form, as shown in Fig. 2. Ahn also shows, at Fig. 3, a document tree and document index that function in much the same way, but with regard to an individual document, instead of a group of documents.

In the Office Action, the Examiner took the position that the formation of group 202 tree is "considered as [the] step of forming an assumed tree structure." Thus, it is the position of the Examiner that the tree 202 corresponds to the recited "assumed tree structure." However, for tree 202 to correspond to the recited assumed tree structure requires that it have each and every recited attribute of the assumed tree structure. As will be developed below, tree 202 fails this test and cannot be said to correspond to the recited assumed tree structure.

The assumed tree structure, as recited for example in claim 6, has at least the following explicitly recited attributes: (a) the assumed tree structure stores all of the items of data that are to be in the data structure to be constructed by the recited method; (b) it includes a sub-tree structure; and (c) a selected sub-tree structure of the assumed tree structure is replaced by an equivalent table to form the data structure that is constructed by the method. Before tree 202 can be said to correspond to the recited assumed tree structure, it must at least have all of these attributes.

As can be seen by the foregoing, the "assumed tree structure" is recited as having *all* of the items of data, *including* those items of data that form *the sub-trees* that are later *replaced* by the equivalent tables in forming the *finalized* data structure constructed, for example, by the method of claim 6. Conversely, the finalized data structure is a data structure formed by *replacing* selected sub-tree structures from the assumed tree structure with

equivalent tables. Such tables would, for example, take up less memory space than the sub-tree structures they replace. It is important that the distinction between the assumed tree structure and the data structure formed by the recited method be kept in mind, and that this distinction be accorded patentable weight, in understanding why Ahn's document tree 202 does not correspond to the recited assumed tree structure.

Ahn's document tree 202 contains no teaching or suggestion of any *sub-tree structures* that are, or ever were, *replaced* by an equivalent table to form a data structure. In Ahn, the tree 202 never changes. It has all the data it is ever going to have, but does not contain sub-trees that are to be replaced with tables to form a data structure. Hence, it is never pruned by replacing selected sub-trees with tables having the same information as the removed sub-trees, as is required by the claims. It is simply a tree that contains pointers to a document index.

Moreover, tree 202 does *not contain all the data* as those terms are used in the claims because all of the data from the group index table 204, the element of Ahn deemed in the Office Action to correspond to the recited equivalent tables, is *not resident in tree 202*. On the other hand, all of the data from the equivalent tables in claim 6, for example, *is* resident in the assumed tree structure, at least because those equivalent tables were formed using the data stored in the sub-tree structures of the assumed tree structure.

In the Office Action, the position was taken that replacement of sub-trees with an equivalent table is taught by Ahn's use of the "glass" node that stores pointers to the group index table. However, there is no teaching or suggestion that the tree 202 contains the information in the group index table. For tree 202 to correspond to the assumed tree structure, it would have to *contain all of the information in document index table 204.* Of course, it does not contain this information, and for at least this further reason, does not correspond to the recited assumed tree structure.

Further, there is no teaching or suggestion that the entries in the group index table 204 were ever a part of the tree 202, or that they *are* a part of tree 202 (which would be

required for tree 202 to correspond to the assumed tree structure), and even less that they are somehow in tree 202 *in a sub-tree structure*. Further, there is no teaching whatsoever that what is being pointed to in Ahn, i.e., the group index table, was ever part of the tree 202 and then subsequently replaced by the table, as required by the claims. In fact, the tree 202 is what it always was, a tree having pointers that point to a table.

Thus, the tree 202 cannot be said to correspond to the recited "assumed tree structure" since it does not have all of the characteristics of the recited assumed tree structure in that: (a) tree 202 does *not* contain all of the data, since that data would include the data in the group index table 204 and there is no teaching that the data in that table is part of tree 202; and (b) since the data of the group index table 204 is not and was never a part of tree 202, it also follows that that table 202 does not contain data from sub-trees that were originally in tree 202 but were replaced with the tables. That is, tree 202 does not have all of the data, as is required, since at least some of the data in the table does not appear in tree 202.

Moreover, as described in the disclosure and Figure 6, the equivalent table stores the items of data included in the sub-tree structure composed of the selected node (e.g., N2) and any child nodes (e.g., N3-N7), as shown in Figure 4. In other words, for example, the data (in a preferred embodiment, all the data) included in the set of bit strings each starting with "00", are stored in the equivalent table.

In contrast, the group/document index table of Ahn is associated with only a node to be searched in the tree structure (see col. 2, lines 42-49 and Figure 2). For example, as shown in Figure 2, the group index table 204 contains only information related to the word "glass."

For at least the reasons delineated in the foregoing paragraphs, the correspondence set forth in rejecting the independent claims is untenable. Accordingly, no prima facie case of obviousness has been established as against the independent claims. As was stated above, an element of the prior art is identified in a rejection as corresponding to a recited feature must

exhibit all of the recited attributes of that feature. It is not enough that it only exhibit some of those features.

For at least this reason, claim 6 is believed clearly patentable over Ahn. Independent claim 9 (apparatus), claim 13 (system) and claim 21 (computer medium) each recite, inter alia, features substantially similar to those discussed above in connection with claim 6 and are believed to distinguish over Ahn for at least the same reasons. Claim 28 also recites, inter alia, features substantially similar to those discussed above. Accordingly, that claim is believed clearly to distinguish over Ahn.

Claim 16 is directed to a storage medium for use in a search system in which items of data from an assumed tree structure that includes all of the items of data are stored for search as computer-readable items of data in a data structure. The storage medium stores the data structure, which comprises: a tree structure in which the items of data are stored except for a portion of the items of data corresponding to a sub-tree of the assumed tree structure, which is a selected portion of the assumed tree structure; and an equivalent table storing the selected portion of the items of data in table form. Applicant has found no teaching or suggestion in Ahn, discussed above, of the features recited in claim 16. Accordingly, claim 16 is believed patentably distinguished from Ahn. Claim 12 is directed to a search system and recites features similar to those recited in claim 16. Claim 12 is believed to distinguish over Ahn for similar reasons.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.
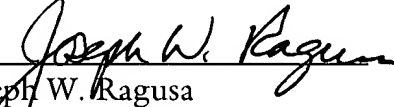
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In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Dated: December 16, 2003   Respectfully submitted,

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